UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/070,157	07/12/2002	Takashi Saito	NAII 118755	9352

26389 7590 07/28/2005

CHRISTENSEN, O'CONNOR, JOHNSON, KINDNESS, PLLC
1420 FIFTH AVENUE
SUITE 2800
SEATTLE, WA 98101-2347

EXAMINER	
SCHNIZER, RICHARD A	
ART UNIT	**PAPER NUMBER**
1635	

DATE MAILED: 07/28/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/070,157	SAITO, TAKASHI	
	Examiner	Art Unit	
	Richard Schnizer, Ph. D	1635	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *25 May 2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *32-97* is/are pending in the application.

4a) Of the above claim(s) *84-97* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☐ Claim(s) *32-83* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *12 July 2002* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☒ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *3/26/02*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

An amendment was received and entered on 5/25/05. Applicant's election of group 1 drawn to methods of perforating a membrane comprising bringing a photosensitizer or photocatalyst into contact with, or into close proximity to, at least a site of said membrane, providing light to denature the membrane, and perforating the membrane with a membrane destroying member that carries the photosensitizer or photocatalyst is acknowledged. Claims 84-97 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected invention, there being no allowable generic or linking claim. Election was made **without** traverse in the reply filed on 5/25/05.

Claims 32-84 are under consideration in this Office Action. Claims 32, 33, 37-39, 42-45, 49-51, 54-57, 61-63, 67-70, 73-75, and 78-79 are linking claims and need be considered only to the extent that is necessary to demonstrate unpatentability. Because these claims are unpatentable for the reasons set forth below, the restricted groups have not been rejoined. Note that claims 80 and 83 were previously, incorrectly, identified as linking claims. Claims 80 and 83 are not linking claims because they depend from claim 48 which is limited to the elected invention.

Information Disclosure Statement

An information disclosure statement was received and entered on 3/26/02. Reference O14 (Matsumoto et al) consists of an English language abstract and a Japanese Language text. Only the abstract of this publication was considered.

Similarly only the provided English Language abstract of foreign reference F1 (H8-322548) was considered.

Claim Objections

Claim 82 is objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of claim 48. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form.

Regarding claim 56, did Applicant intend for the last word of this claim to be "membrane" rather than "substance"? In view of the specification as a whole, it seems as if the invention is directed to methods of limiting perforation to specific areas of tissues or cell membranes by limiting the site of application of both the stimulus and the perforating substance, whereas introducing a stimulus to a particular part of a substance does not seem to add much to the claim.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 33, 39, 41, 43, 45, 51, 53, 55, 57, 63, 65, 68, 70-73, 75-78, and 80-83 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 33, 45, and 57 are indefinite because they refer to a "cell wall" as a "membrane". Biological membranes are either lipid bilayers (as in cell membranes) or sheets of tissue (as in chorionic or tympanic membranes), and membranes in general are characterized as soft and pliable. See Merriam Webster's Collegiate Dictionary, Tenth Edition, 1997, page 724. In contrast, cell walls are composed of polysaccharides, and are rigid structures. As such, while Applicant is entitled to be his own lexicographer, one of skill in the art would find repugnant the designation of a cell wall as a membrane.

Claims 39, 41, 43, 51, 53, 55, 63, and 68 are indefinite because they recite "said member" without proper antecedent basis. Claims 39, 41, and 43 depend from claim 37. Claims 51, 53, and 55 depend from claim 49. Claims 63 and 68 depend from claim 61. Each of claims 37, 49, and 61 provides 3 antecedents for "said member". It is unclear to which of the three "said member" refers.

Claim 65 is indefinite because it recites "said capillary" without antecedent basis.

Claims 71-73, 75-78, and 80-83 are indefinite because they recite "[t]he microinjection method" without antecedent basis.

Claim 70 is indefinite because it recites "said substance to be injected" without antecedent basis.

Claims 73 is indefinite because it recites "the substance to be injected" without antecedent basis.

Claims 78 and 83 are indefinite because they recite "the capillary" without antecedent basis.

Claims 80 is indefinite because it recites "said substance to be injected" without antecedent basis.

The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Written Description

Claims 32-83 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Claims 32-83 are drawn to a genus of methods using combinations of a specific compound plus a specific stimulation which result in denaturing or perforating a specific site of any membrane or cell wall. The disclosure only teaches one such combination, that of photosensitizing compounds plus light stimulation for the perforation of lipid bilayers. The disclosure also lists various other compounds, such as antibodies, glycoproteins, nitroglycerin, and so forth, and provides a list of various stimulations, including cooling, ultrasonic waves, chemical substances, and so forth, without contemplating, for example, which specific glycoprotein or antibody in combination with which specific stimulation would work. The specification teaches only that "the combination of membrane-denaturing agent and stimulus used for denaturing or

perforating the membrane can be selected as any combination, as long as it can perforate the membrane in a controllable manner, without completely destroying the membrane" (page 5 first full paragraph). The specification fails to reduce to practice or disclose any specific combination, other than photosensitizing compounds plus light stimulation for perforation of lipid bilayers, that meets these functional criteria. The specification also fails to describe any relevant identifying characteristics, such as a known or disclosed correlation between structure and the required function, that would convey to one of skill in the art that Applicant was in possession of the claimed genus. Since the disclosure fails to describe the common attributes or characteristics that identify members of the genus, and because the genus is highly variant, the combination of a photosensitizing compound plus light stimulation alone is insufficient to describe the genus, especially considering that the genus also encompasses a huge variety of membranes from biological membranes to metal membranes, polysaccharide cell walls, and electric conductive high molecular membranes (see page 9). One of skill in the art would reasonably conclude that the disclosure fails to provide a representative number of species to describe the genus. Thus, applicant was not in possession of the claimed genus.

Enablement

Claims 32-83 are rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for a method of denaturing or perforating a lipid membrane using a photosensitizing compound and light stimulation, does not

reasonably provide enablement for the full scope of contemplated combinations of compounds and specific stimulations to denature/perforate a membrane, and does not reasonably provide enablement for methods of perforating cell walls or non-lipid membranes. The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to practice the invention commensurate in scope with these claims.

The following factors have been considered in determining that the specification does not enable the skilled artisan to practice the invention commensurate in scope with the claims.

The nature of the invention. The invention is complex because in order to denature or perforate a specific site of a membrane, the method requires a combination of a membrane-denaturing substance that induces a membrane-denaturing reaction by a specific stimulation and also said stimulation.

The state of the prior art and the predictability or unpredictability of the art. The prior art and specification taught that cell membranes are fluid lipid bilayers that are susceptible to damage by oxidation of lipid components by reactive oxygen species. The prior art teaches combinations of photosensitizing compounds and light stimulation for perforating cell membranes; see rejections under 35 USC 102 below. The prior art also teaches many methods of perforating biological membranes for introduction of substances into cells, e.g. by means of electroporation, which uses electricity, and by microinjection, as well as other methods. However, while electricity and physical contact (microinjection) are listed as stimuli on page 6 of the instant specification, it seems that

no accompanying "membrane denaturing substances" are required in combination in the art; that is, electricity in the context of electroporation will perforate a membrane without the need for a compound that "induces a membrane-denaturing reaction", and likewise microinjection apparently also does not require such a substance, unless one considers the micropipette to be the substance (see rejections under 35 USC 102 below). Thus, it is unpredictable, in the art, what sort of "membrane denaturing substances " could be used in combination with the various disclosed stimuli of the instant application, and when these stimuli alone are sufficient. Further, it is unpredictable what membrane denaturing substances exist that, in combination with other stimuli, would achieve the method of the instant claims.

The amount of direction or guidance presented in the specification and the presence or absence of working examples. The specification contemplates many different stimuli, including radiation, heat, cooling, electricity, magnetism, ultrasonic waves, viruses, and so forth (page 6), and many different denaturing substances including explosive compounds such as nitroglycerin, antibody molecules, glycoproteins, lipids, magnetic particulates, metal particles, and so forth (pages 6 and 7). The specification also states that "the combination of membrane-denaturing agent and stimulus used for denaturing or perforating the membrane can be selected as any combination, as long as it can perforate the membrane in a controllable manner, without completely destroying the membrane" (page 5 first full paragraph). However, the specification only lists different compounds and different stimulations without stating which combinations will work (pages 6 and 7). With the exception of the combination of

photosensitizing compounds and light for the perforation of lipid membranes, there is no guidance in the specification or working examples as to any combinations of compounds and stimulations for perforation of any membrane. The specification, then, invites the person of skill in the art to experiment to invent new combinations of compounds and stimuli that are not contemplated in the instant specification. For example, the specification provides no guidance or working examples as to how to use photosensitizers or photocatalysts, as defined in the specification, to perforate cell walls. In view of the fact that photosensitizers or photocatalysts function to destabilize lipid bilayers through oxidation of lipids, and are not disclosed as affecting cell wall-forming polysaccharides, one of skill in the art would expect to be able to have to perform undue experimentation to perform the claimed method on cell walls, or on any membranes other than lipid bilayers.

The breadth of the claims. The claims are extremely broad. The claims encompass an unlimited number of possible membrane-denaturing substances which can be anything from "glycoproteins" (although it is not stated, for example, which "specific" glycoproteins would be useful, if any) to "explosive compounds" and so forth, and a huge number of possible stimuli which can be anything from viruses to ultrasonic waves, to cooling, and so forth. The claims also encompass an extremely broad number of different types of membranes (see page 9, in which "membrane" can encompass cell membranes, metal membranes, electric conductive high molecular weight (polyacetylene) membranes, etc).

The quantity of experimentation. Based on the complex nature of the invention, the state of the prior art, the unpredictability of the art, the lack of sufficient guidance or working examples in the specification, and the breadth of the claims, an undue amount of experimentation is required for one of skill in the art to practice the claimed invention commensurate with its full scope. Not only would the skilled artisan have to perform undue experimentation to invent different combinations of a specific compound plus a specific stimulation, but also the artisan would have to perform undue experimentation to determine which such combinations would work for different types of "membranes" that could be anything from a biological cell membrane to polysaccharide cell wall to metal.

Double Patenting

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970);and, *In re Thorington,* 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Claims 56-60 and 79 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1 and 2 of U.S.

Patent No. 6,753,171. Although the conflicting claims are not identical, they are not patentably distinct from each other for the following reasons.

Claims 1 and 2 of '171 are presented below:

> 1. A method of site specific regulated membrane disruption comprising: contacting a membrane with a membrane-disrupting reagent that induces a membrane-denaturing reaction when the membrane is exposed to a stimulus, wherein the membrane-disrupting reagent is attached to a support which facilitates precise contact of the membrane-disrupting reagent with the membrane, wherein the membrane is separate and distinct from the support; and applying the stimulus to the membrane at a contact site under conditions effective to temporarily and partially disrupt the membrane only at the contact site where permeability of the membrane recovers to the state prior to disruption, wherein the stimulus is light, and the membrane-disrupting reagent is a photosensitizing compound.
>
> 2. A method of site specific regulated membrane disruption comprising: contacting a membrane with a membrane-disrupting reagent that induces a membrane-denaturing reaction when the membrane is exposed to a stimulus, wherein the membrane-disrupting reagent is attached to a support which facilitates precise contact of the membrane-disrupting reagent with the membrane, wherein the membrane is separate and distinct from the support; and applying the stimulus to the membrane at a contact site under conditions effective to temporarily and partially disrupt the membrane only at the contact site where permeability of the membrane recovers to the state prior to disruption, wherein the membrane-disrupting reagent is a reactive oxygen species and the stimulus is selected from the group consisting of light energy, electrical energy, and chemical energy.

These claims do not explicitly require that "said stimulus is carried through a stimulus-carrying member, and said stimulus-carrying member locally introduces said stimulus to a selected site of said substance." However, the portion of the specification that supports the claims shows that a stimulus carrying member such as a microscope or other light source can be used to provide the light stimulus to the locale of the membrane-disrupting reagent. See e.g. column 15, lines 17-24 which discloses limiting excitatory light exposure to a single cell in a microscopic field. So, instant claims 56-60 are obvious in view of '171 claims 1 and 2. Instant claim 79 requires the step of injecting a desired substance into the membrane. This claim is considered to be obvious because the "desired substance" could be considered to be the recited

membrane-disrupting reagent. Furthermore, Example 5, which supports the claimed invention discloses injection of Lucifer Yellow in addition to the membrane-disrupting reagent. See columns 16, line 34 to column 21, line 51.

Claims 56-60 and 79 are directed to an invention not patentably distinct from claims 1 and 2 of commonly assigned US Patent 6,753,171, for the reasons set forth above. The U.S. Patent and Trademark Office normally will not institute an interference between applications or a patent and an application of common ownership (see MPEP § 2302). Commonly assigned 6,753,171, discussed above, would form the basis for a rejection of the noted claims under 35 U.S.C. 103(a) if the commonly assigned case qualifies as prior art under 35 U.S.C. 102(e), (f) or (g) and the conflicting inventions were not commonly owned at the time the invention in this application was made. In order for the examiner to resolve this issue, the assignee can, under 35 U.S.C. 103(c) and 37 CFR 1.78(c), either show that the conflicting inventions were commonly owned at the time the invention in this application was made, or name the prior inventor of the conflicting subject matter.

A showing that the inventions were commonly owned at the time the invention in this application was made will preclude a rejection under 35 U.S.C. 103(a) based upon the commonly assigned case as a reference under 35 U.S.C. 102(f) or (g), or 35 U.S.C. 102(e) for applications filed on or after November 29, 1999.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.
>
> (f) he did not himself invent the subject matter sought to be patented.

Claims 32-33, 37-39, 44-46, 49-51, 56-58, 61-63, 69, 70, 73, 74, 79, and 83 are rejected under 35 U.S.C. 102(b) as being anticipated by Bataille et al (J. Cell. Biol. 111: 1571-1582, 1990).

Bataille taught a method of microinjecting the nucleus of a Xenopus oocyte. In the method, a microinjection needle is used to pierce both the oocyte and nuclear membranes for injection of ribosomal subunits into the nuclei. See page 1573, column 1, first and second paragraphs under "***Intranuclear Injections and Oocyte Dissection***." To the extent that the needle pierces the membranes, the membranes are denatured, and the needle is considered to be a membrane-destroying substance. The needle is also considered to be a membrane destroying member and a capillary. The required stimulus is the physical contact provided by forcing the needle through the membranes. As a result, the stimulus is carried through the membrane destroying member. Note that certain claims including claims 79 and 83 require injection of a substance "into the membrane". Normally injection "into" a membrane would not be considered to be equivalent to injection *through* a membrane and into a cell. However, in this case the specification at page 10, lines 6 and 7, depicts Fig. 2 as a process of

injecting a tip of a capillary "into" a cell membrane, whereas inspection of Fig. 2 shows that the capillary is clearly punched *through* the membrane resulting in injection of a substance into the cell, inside the membrane. As a result it seems that the specification equates the terms "through" and "into" within the context of the invention. For this reason claims 79 and 83 are included in the rejection.

Claims 32-33, 37-39, 44-46, 49-51, 56-58, 61-63, 69, 70, 73, 74, 79, and 83 are rejected under 35 U.S.C. 102(b) as being anticipated by Laffafian et al (Biophys. J. 75:2558-2563, 1998).

Laffafian taught a method of microinjecting material into the cytosol of mammalian cells. In the method, a microinjection needle is coated with lipids and is used to deliver hydrophilic material across the cell membrane into the cytoplasm. In the process, the lipids coating the needle are injected into the cell membrane. See abstract; page 2559, column 2, third full paragraph; Fig. 1 on page 2560; Fig. 3 on page 2561; and page 2562, column 2, lines 10-14. To the extent that the needle modifies the membranes, the membranes are denatured, and the needle is considered to be a membrane-destroying substance. The needle is also considered to be a membrane destroying member, and a capillary. (See e.g. paragraph bridging pages 2560 and 2561 which discloses that the technique results in membrane rupture). The required stimulus is the physical contact provided by forcing the needle into the membrane. As a result, the stimulus is carried through the membrane destroying member. Note that certain claims including claims 79 and 83 require injection of a substance "into the

membrane". This limitation is met by the deposition into the cell membrane of the lipids that coat the needle.

Claims 32-39, 44-51, 56-63, 66, 69-74, and 79-82 are rejected under 35 U.S.C. 102(b) as being anticipated by Chen et al (US Patent 5,445,608), as evidenced by Hale (US Patent 5,089,384) and Morgan et al (US Patent 5,446,157).

Chen taught methods of photodynamic therapy (PDT) by delivery of a photoreactive agent to a cell and illumination of the cell with stimulatory light. See abstract; column 1, lines 15-36; column 4, lines 3-16, column 5, lines 9-15 and column 7, lines 6-12. In particular, Chen taught that the method could be practiced with the apparatus shown in Fig. 17 which allows one to deliver a photosensitizer through a catheter which also comprises an optical fiber. This arrangement allows precise illumination at the site of photosensitizer delivery. See column 23, line 42 to column 24, line 9; and column 24, lines 16-31. The catheter functions as the instantly recited capillary, and the optical fiber functions as the membrane destroying member that carries the stimulus. The photoreactive agent is a photosensitizer, see e.g. column 1, lines 15-36 which defines photodynamic therapy as a process in which a photoreactive dye is used to sensitize cells. As evidence that the photoreactive agent is delivered to a membrane see also Hale at column 1, lines 20-29 which disclose that PDT methods treat a cell by coating its surface with a dye which responds to light by creating singlet oxygen species which destroy cell membrane structures. See also Morgan at column 36, lines 40-53 which disclose that photodynamic therapy damages membranes.

Regarding claims drawn to photocatalysts, the singlet oxygen producing photoreactive agents of Chen are considered to be photocatalysts because they function by first being excited by light into an energized state, then transferring that energy to molecular oxygen to produce singlet oxygen, and to thereby return to the ground state and regenerate the photocatalyst. See e.g. Morgan at column 3, lines 46-51.

Claims 56-60 and 79 are rejected under 35 U.S.C. 102(f) because the applicant did not invent the claimed subject matter.

As discussed above under Double Patenting, claims 1 and 2 of commonly assigned US Patent 6,753,171 are not patentably distinct from instant claims 56-60 and 79. The '171 lists an inventor (Karube) not listed on the instant application, and there is currently nothing in the instant prosecution history to show that the conflicting inventions were commonly owned at the time the instant invention. As a result, the question arises as to who invented the instantly claimed, but not patentably distinct, invention.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 56-60 and 79 are rejected under 35 U.S.C. 103(a) as being unpatentable over commonly assigned US Patent 6,753,171.

As discussed above under Double Patenting, instant claims 56-60 and 79 are obvious over claims 1 and 2 of commonly assigned US Patent 6,753,171 because the '171 patent claims are drawn to methods of contacting a membrane with a membrane-disrupting reagent that induces a membrane-denaturing reaction when the membrane is exposed to a stimulus; and applying the stimulus to the membrane, wherein the stimulus is light, and the membrane-disrupting reagent is a photosensitizing compound. While the '171 claims do not explicitly require that "said stimulus is carried through a stimulus-carrying member, and said stimulus-carrying member locally introduces said stimulus to a selected site of said substance", the portion of the specification that supports the claims shows that a stimulus carrying member such as a microscope or other light source can be used to provide the light stimulus to the locale of the membrane-disrupting reagent. See e.g. column 15, lines 17-24 which discloses limiting excitatory light exposure to a single cell in a microscopic field. Instant claim 79 requires the step of injecting a desired substance into the membrane. This claim is considered to be obvious because the "desired substance" could be considered to be the recited membrane-disrupting reagent.

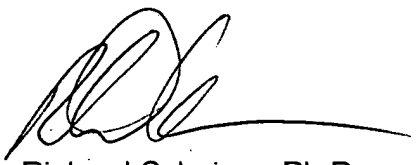
Thus the invention as a whole was prima facie obvious.

Conclusion

No claim is allowed.

Any inquiry concerning this communication or earlier communications from the examiner(s) should be directed to Richard Schnizer, whose telephone number is 571-272-0762. The examiner can normally be reached Monday through Friday between the hours of 6:00 AM and 3:30. The examiner is off on alternate Fridays, but is sometimes in the office anyway.

If attempts to reach the examiner by telephone are unsuccessful, the Examiner's supervisor, Andrew Wang, can be reached at (571) 272-0811. The official central fax number is 571-273-8300. Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to (571) 272-0547.



Richard Schnizer, Ph.D.